



Harestanes Windfarm Extension

Environmental Statement

Non-Technical Summary

November 2013

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**Prepared by
LUC
on behalf of
ScottishPower Renewables**

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Preface

This Non-Technical Summary has been prepared in support of an Environmental Statement and application for Section 36 Consent under the Electricity Act 1989 and application seeking a direction that deemed planning permission be granted to construct and operate the seven turbine Harestanes Windfarm Extension ('the Development'). The Development is located in Dumfries and Galloway, approximately 6km west of Moffat, 20km north-west of Lockerbie and 23km north of Dumfries.

The Environmental Statement comprises the following documents:

- Volume 1: Written Statement
- Volume 2: Figures
- Volume 3: Appendices

In addition to the above, the Environmental Statement is accompanied by a Planning Statement, Design and Access Statement and Pre-Application Consultation Report.

Copies of all these documents or further information on the Development may be obtained from:

ScottishPower Renewables
2nd Floor New Building,
North Wing
Cathcart Business Park,
Spean Street,
Glasgow,
G44 4BE

Tel: 0141 6140438 or by emailing: info@harestaneswindfarmextension.co.uk

This Non-Technical Summary is available free of charge. A hard copy of the Environmental Statement Volumes 1, 2 and 3 and the associated documents costs £300. In addition, all documents are available in an electronic format (as PDF for screen viewing only) on CD/DVD for £20.

The Environmental Statement and associated documents are available for viewing by the public during normal opening hours at the following locations:

Dumfries and Galloway Council
Development Management
Kirkbank
English Street
Dumfries
DG1 2HS

Thornhill Library
Townhead Street
Thornhill
DG3 5NW

Dumfries and Galloway Council Customer Service Centre
High Street
Moffat
DG10 9HF

Comments in relation to the applications for Section 36 Consent and deemed planning permission should be forwarded to the address below:

Energy Consents and Deployment Unit
Scottish Government
4th Floor
5 Atlantic Quay
150 Broomielaw

Glasgow
G2 8LU

Or by emailing: representations@scotland.gsi.gov.uk

Non-Technical Summary

1.1. Introduction

1. ScottishPower Renewables (UK) Ltd (hereafter referred to as 'SPR'), is seeking consent from Scottish Ministers under Section 36 of the Electricity Act (1989)ⁱ for the construction and operation of Harestanes Windfarm Extension (hereafter referred to as 'the Development'). SPR is also seeking a direction from Scottish Ministers that deemed planning permission for the Development be granted under Section 57 (2) of the Town and Country Planning (Scotland) Act 1997ⁱⁱ.
2. The Development is an extension to the consented Harestanes Windfarm, located immediately to the south. Consent for Harestanes Windfarm was granted by Scottish Ministers under Section 36 of the Electricity Act (1989) in 2007, and the main infrastructure construction activity began in July 2012. Harestanes Windfarm comprises 68 turbines and is due for completion in 2014.
3. The Development is located within the Dumfries and Galloway Council administrative area, approximately 6 kilometres (km) west of Moffat; 20km north-west of Lockerbie; and 23km north of Dumfries. The location of the Development (the Section 36 red line boundary) is shown in **Figure 1**. The Development Area, shown as the blue boundary on **Figure 2**, encompasses all the new components required for the construction and operation of the Development.
4. The application for Section 36 consent and deemed planning permission are accompanied by this Environmental Statement (ES), which has been undertaken in accordance with the Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2000ⁱⁱⁱ ('the EIA Regulations'). The ES presents information on the identification and assessment of the likely significant environmental effects of the Development. Further details of the statutory requirements for Environmental Impact Assessment (EIA) are set out in the ES.
5. This Non-Technical Summary (NTS) summarises the findings and conclusions of the ES.
6. The ES has been prepared by LUC on behalf of SPR. LUC also produced the following ES chapters:
 - Planning Policy Context;
 - Landscape and Visual Amenity;
 - Ecology;
 - Socio-Economics, Tourism, Recreation and Land Use;
 - Other Issues.

7. A number of sub-consultants undertook further specialist assessments as part of the EIA as follows:
- **Mott MacDonald** undertook the Hydrology, Hydrogeology and Peat Stability, Access, Traffic and Transport and Carbon Balance assessments;
 - **Strath Caulaidh Ltd** provided specialist advice on Habitats and Peat;
 - **Natural Research Projects (NRP)** undertook the Ornithology (bird) assessment;
 - **Hoare Lea Acoustics** undertook the Noise assessment;
 - **CFA Archaeology** undertook the Cultural Heritage assessment;
 - **Pager Power** provided expert advice on Telecommunications, Television and Aviation.
8. SPR is part of Iberdrola, a world leader in wind energy, with an operating portfolio of over 14,000 megawatts (MW). SPR is responsible for progressing Iberdrola's onshore wind and marine energy projects in the UK and Ireland, and offshore windfarms throughout the world, managing the development, construction and operation of all projects. Securing its position at the forefront of the renewable energy industry, SPR became the first UK developer to reach an installed generating capacity of 1,000MW in 2011, in addition to being awarded a second Queen's Award for Enterprise for Sustainable Development. With a pipeline including 10,000MW of offshore wind, and the world's first 10MW tidal energy array in the Sound of Islay, SPR is firmly committed to the responsible development of renewable energy.

1.2. Renewable Energy Policy

9. The UK Government and the Scottish Government are committed to ensuring that an increased proportion of electricity is generated from wind power and other renewable energy sources. Improvements in technology and rising fossil fuel costs have resulted in the cost of wind power converging towards the costs of conventional sources of electricity. Further growth in the wind energy sector can therefore be expected.
10. Scotland in particular has a significant wind resource. The report 'Scotland's Renewable Resource 2001' considered a range of available renewable energy technologies examining associated development constraints and costs. The key conclusion in relation to onshore wind development was that the resource is widespread and is the cheapest of the technologies considered and on the basis of cost, onshore wind energy can be expected to contribute to the bulk of near-term government targets.
11. The Climate Change (Scotland) Act 2009 aims for an 80% reduction in Scotland's greenhouse gas emissions by 2050 and includes an interim target of a 42% reduction by 2020 (compared to 1990 levels). Scotland's current renewable energy target is to deliver the equivalent of 100% gross annual electricity demand from renewable sources by 2020.

1.3. Environmental Impact Assessment and Mitigation

12. EIA involves the compilation, evaluation and presentation of any potentially significant environmental effects resulting from a proposed development, to assist the consenting authority, statutory consultees, and wider public in considering an application. Early identification of potentially adverse environmental effects also leads to the identification and incorporation of appropriate mitigation measures

into the scheme design to avoid, reduce and, if possible, remedy potentially significant adverse environmental effects. SPR as the holder of a generating licence under the Electricity Act 1989, is also under an obligation to undertake reasonable mitigation when formulating a proposal such as the Development.

1.4. Site Selection and Design Strategy

13. The Development Area is being proposed by SPR for a number of reasons:
- it has a good wind resource;
 - it is located adjacent to the Harestanes Windfarm which is currently being constructed, therefore benefitting from the use of the consented grid connection, operation and maintenance compound and access;
 - extending Harestanes Windfarm not only increases operational efficiency, but reduces environmental effects overall as compared to a similar development on a new site;
 - it is a location in which a development can accord with the principals set out in Scottish Planning Policy (SPP) in relation to renewable energy;
 - there are no statutory nature conservation designations within the Development Area;
 - SPR has collated an extensive database of information in relation to the Development Area and environs through experience of developing and constructing Harestanes Windfarm and have used this during the Development design process.
14. The relationship of the Development to Harestanes Windfarm was the overarching consideration of the initial design concept, particularly in landscape and visual terms. Initially it was the intention that the Development should be legible as an extension to Harestanes Windfarm, with sweeping lines of turbines, extending on from the lines of Harestanes turbines. On this basis an initial design comprising 28 turbines aimed to extend the layout of the Harestanes Windfarm across the Development Area, creating a link between them. However, following detailed topographical analysis of the Development Area, and studying the initial layout from surrounding views, it was concluded that a layout, coherent in its own right, would be more appropriate for this location. The initial design concept was therefore altered at an early stage to aim for a 'stand-alone' design that relates to Harestanes Windfarm but is discrete and legible in its own right.
15. The main components of the Development considered in the early design stage were the turbines which were located to take account of environmental survey information gathered during the EIA process. A number of modifications to the turbine layout were made to take account of environmental features, for example distance to residential properties, archaeological features and areas of blanket bog. Infrastructure features such as tracks and borrow pits were designed later, taking account of the same onsite environmental constraints used to inform the turbine locations.
16. Further details of the design strategy can be found in the ES.

1.5. The Development Proposal

17. The area Development Area (as shown on **Figure 2**) is approximately 6.5km east-west and 5km north-south and occupies a total area of approximately 1,863 hectares (ha.). However, the Development will occupy only a small percentage of this (0.43%) (approximately 8ha. during construction). The area of land-take required for all development infrastructure once the site is operational will be approximately 5ha.
18. The Development is described in the ES and shown on **Figure 3**. In summary, it will comprise:
- seven wind turbines of up to 126.5metres (m) (to tip) height, with a combined output of approximately 16.1MW;
 - construction of approximately 6.2km of access tracks;
 - crane hardstandings for each turbine;
 - turning heads to allow delivery vehicles to turn around;
 - one permanent meteorological mast;
 - underground electrical cables including connection into the control building and substation associated with Harestanes Windfarm;
 - the creation of up to three temporary onsite borrow pits for the extraction of stone;
 - one temporary construction compound/laydown area (located within the existing Harestanes Windfarm site);
 - site signage.
19. The Development Area will be accessed via the existing forestry track from the A701 utilising the same access point as Harestanes Windfarm. Only localised modifications to road furniture and the site access will be required to facilitate turbine blade delivery. The location of the access point and the proposed route from the public road network through Harestanes Windfarm to the Development Area is shown on **Figure 2**.
20. Within the Development Area, in total, approximately 6.2km of new access tracks will be constructed. These new access tracks will branch off from the existing Harestanes Windfarm tracks and will run north into the Development Area. The access tracks will be retained throughout the operational life of the Development to enable maintenance of the turbines and replacement of any turbine components.
21. Subject to the granting of Section 36 Consent and deemed planning permission, it is anticipated that the construction of the Development will take place over a 12 month programme.
22. The operational life of the Development is 25 years. Following this, an application may be submitted to retain or replace the turbines, or the turbines could be decommissioned.
23. The turbines will connect into the control building and substation that forms part of Harestanes Windfarm. The Development will utilise the Harestanes Windfarm grid connection throughout its operational life.

1.6. Scoping and Consultation

24. The purpose of scoping and pre-application consultation is to:

- ensure that consultees are informed of the proposal and provided with an opportunity to comment at an early stage in the EIA process;
- obtain baseline information regarding existing environmental site conditions;
- establish key environmental issues and identify potential effects to be considered during the EIA;
- identify those issues which are likely to require more detailed study and those which can be justifiably excluded from further assessment;
- provide a means of confirming the most appropriate methods of assessment.

1.6.1 Scoping

25. Scoping is undertaken at the outset of the assessment process according to the guidance provided in Planning Advice Note (PAN) 1/2013 Environmental Impact Assessment.

26. The scope of the EIA was informed by the Scoping Opinion provided by the Scottish Government in July 2010 and the responses received from key consultees including Scottish Natural Heritage (SNH), Historic Scotland (HS), Dumfries and Galloway Council and the Scottish Environment Protection Agency (SEPA).

27. The request for a Scoping Opinion formed the basis for early consultation with a number of organisations, who were asked for relevant information, opinions on the scheme and views on the proposed assessment methodologies.

28. In addition to the consultees contacted by the Scottish Government during the formal scoping process, topic area specialists engaged in further consultation and contacted a number of other stakeholders to obtain background information to further inform the EIA and allow them the opportunity to raise any concerns that they might have in relation to the Development.

1.6.2 Consultation

29. Consultation has formed an integral part of the EIA process and both the EIA team and SPR have contacted a number of interested parties to determine their views on the scheme, collect baseline information and to refine survey methodologies.

30. Meetings have been held with a number of statutory and non-statutory consultees during the EIA process to inform the consultees of progress with the project, to enable any potential issues or concerns raised by the consultees to be discussed, and to ensure the assessment process is transparent.

31. All applications under Section 36 of the Electricity Act are required to go through the Scottish Government's 'Gatecheck' procedure. Following consultation with the statutory consultees on the Gatecheck Report, a meeting was held with the Scottish Government Energy Consents and Deployment Unit in November 2013 to enable the case officer to review the draft ES and confirm the application process.

32. SPR has attended meetings with Community Councils that represent the areas within, or adjoining, the Development Area and has offered further opportunities to meet these Community Councils prior to the submission of the application.
33. Public consultation is also a key element of the EIA process. In addition to the Community Council consultation, the following public consultation was carried out:
- SPR held a first round of public consultation events in Moffat Town Hall on 23rd June 2010 and Thornhill Community Centre on 24th June 2010 to provide information to local residents, and to gain feedback on the proposals in the early stages of development;
 - SPR held a second round of public consultation events in Moffat Town Hall on 3rd of July 2013 and Thornhill Community Centre on the 4th July 2013 to provide information regarding the updated scheme design.
34. The information available at the public consultation events included plans of the proposed Development layout, information boards explaining the key potential environmental effects, and photomontages to illustrate anticipated views. Representatives of SPR and LUC were also available to provide additional information and answer queries. A computer laptop equipped with windfarm software was also available, allowing members of the public to see views from requested locations. Attendees were invited to complete feedback forms to provide input to the ongoing progression of the proposals. Information received at the public consultation events was fed back to the EIA team and incorporated into the assessment process.

1.7. Landscape and Visual Amenity

35. The landscape and visual impact assessment (LVIA) considered the effect that the Development will have on the landscape and on the people who view that landscape.
36. The study area for the assessment was defined as 35km from the outermost turbines of the proposed Development in all directions, as recommended by current good practice guidance for turbines of the size proposed. The cumulative assessment study area includes consideration of windfarm developments across an area of 60km radius from the outermost turbines of the proposed Development, in accordance with relevant guidance, but focusses on the cumulative relationships of the Development with windfarms within the 35km study area from the outermost turbines of the Development. To assess likely effects on visual amenity during operation of the proposed Development, 15 viewpoints were agreed with the consultees for detailed review¹.
37. The Development Area is located in the Lowther Hills, within the Southern Uplands, which extend across Dumfries and Galloway and other parts of southern Scotland. The Development Area lies on two high ridges to the north of Queensberry and to the west-south-west of Moffat, in Dumfries and Galloway. Coniferous forest plantations adjacent to the Development Area screen some views from the east. The Development Area comprises open grassy moorland and bog, with some patches of bracken. The Southern Upland Way also crosses the study area.

¹ An additional nine viewpoints were requested by Dumfries and Galloway Council at the Section 36 Gatecheck process that have also been assessed and presented within an appendix to ES Chapter 6: LVIA.

38. The overall aim of the design strategy was to design a windfarm that represented an optimum landscape 'fit' within the technical and environmental parameters of the project and the Development Area. As wind turbines are tall man-made structures, the initial design objectives considered their size and location, with emerging turbine layouts tested from key views around the Development Area. During the iterative design process, turbines were removed to reduce visual effects, whilst consideration was also given to the siting of associated infrastructure.
39. During the operational phase, there will be significant effects on the landscape of the Development Area and a locally significant effect on the 'Southern Uplands' Landscape Character Type. Significant visual effects are also predicted for eight of the 15 viewpoints. It is important to note that the viewpoint locations with the clearest views of the Development were identified. These locations therefore represent the 'maximum case' views rather than typical views across the study area. Significant visual effects are also predicted between the Beattock Hill and Daer Reservoir section of the Southern Upland Way (between approximately 4.5km and 7km away) but not significant for the route as a whole. No significant effects are predicted from identified settlements, or other routes within the study area.
40. No significant cumulative landscape effects, visual effects, effects on settlements, routes or residential properties are predicted.
41. Measures to reduce landscape and visual effects were predominantly achieved through the design of the Development, although effects during construction will be further minimised through site restoration measures.

1.8. Hydrology, Hydrogeology and Peat Stability

42. The assessment of effects on hydrology, hydrogeology, geology and peat has considered the potential effects of pollution risk and of erosion and sedimentation on surface water and groundwater, and on public and private water supplies. In addition, flood risk during operation of the Development, and potential effects upon the linkage between groundwater and surface water during construction and operation of the Development are also assessed.
43. The hydrological study area has been defined as the Development Area as well as bodies of water and their catchments which could potentially be affected by change resulting from the construction and operation of the Development. It comprises five sub-catchments, Crook Burn (inflow to Dear Reservoir owned by Scottish Water as a public water resource), Capel Burn, the Water of Ae, Lochan Burn and Kinnel Water, which form part of three wider catchment systems.
44. The Development Area comprises open upland habitats including grassland and mire habitats; with extensive areas of blanket bog with very little built development and limited infrastructure provisions. Peat within the Development Area is generally shallow, being less than 0.5m deep with localised areas of thicker deep between 1 to 2m on flatter areas such as saddles between hill tops. Several watercourses drain the Development Area.
45. The hydrology and peat distribution within the Development Area influenced the design of the turbine and infrastructure layout so as to avoid and/or minimise potential effects on these receptors where possible. Application of a minimum distance for the location of infrastructure from watercourses is the principal means by which surface hydrology can be protected (and therefore any dependent ecology or water supplies). A 10m buffer was applied to Lochan Burn and Kinnel Water (including its tributaries). A 50m buffer was applied to Crook Burn and its tributaries. This buffer has been increased as the downstream water

body (Daer Reservoir) is a public source of drinking water. A 50m buffer was also applied to Water of Ae due to its location within a dense network of man-made forest drains.

- 46. The presence of peat within the Development Area formed a key consideration in the design of the proposed Development. Informed by the peat probing, the development of the design minimised the location of turbines and associated infrastructure within areas of deeper peat (> 1.5m). The design process also sought to minimise the number of watercourse crossings.
- 47. During construction and operation of the windfarm, established good practice measures will be applied in relation to pollution risk, sediment management and management of surface runoff rates and volumes. These will form part of the Construction Environment Management Plan to be implemented for the Development. SPR is committed to implementing these measures that form an integral part of the design/construction process. With the adoption of additional mitigation measures to protect surface water and localised groundwater conditions, no significant effects are predicted. There are also no potential cumulative effects with any other developments.

1.9. Ecology

- 48. The ecological assessment considered potential effects on ecology, including habitat loss and disturbance to protected species.
- 49. The study area for the ecological assessment has been defined as 10km in all directions from the Development Area for designated sites and 2km in all directions for available species records. Field surveys were carried out to establish habitat types and presence and distributions of badgers, bats, otters, water voles and fisheries, with the study area being determined by species type.
- 50. There are no statutory designated sites for nature conservation within the Development Area. There are three designated nature conservation sites and no non-statutory designations within 10km of the Development Area.
- 51. The Development Area occupies an upland position at the southern edge of the Scottish Southern Uplands, with peatland habitat, most notably blanket bog and other mire systems present.
- 52. In relation to protected species, a number of badger setts were identified in the very east and south-east of the Study Area. Otter surveys identified extensive evidence of use along the study area's watercourses. All watercourses within the study area were considered suitable for fish and electrofishing surveys identified a single fish species, the brown trout. No evidence of water vole was identified by the field survey and limited bat activity was recorded.
- 53. The final Development layout included a number of design modifications to reduce ecological effects. This including removing a number of turbines from extensive areas of blanket bog. In addition, the route of the proposed access tracks was re-aligned at several locations to minimise fragmentation of sensitive habitats.
- 54. No significant effects are predicted on designated nature conservation sites as the Development Area has no ecological connectivity with these sites. During construction it is anticipated that there will be a local level significant effect on mire and peatland habitats due to habitat loss and physical disturbance prior to mitigation. Prior to mitigation a site level significant effect is also predicted on otter. It is also predicted that there will be a site level significant effect on bats during operation of the Development prior to mitigation.

55. An outline habitat management plan is proposed to enhance the condition of existing areas of priority habitats within the Development Area. Measures are proposed to ensure construction staff are aware of otter locations and movements as well as marking out areas considered sensitive for otters. Following implementation of mitigation measures, no residual significant negative effects are predicted on habitats or protected species.

1.10. Ornithology

56. The assessment of potential effects on birds considered direct and indirect habitat loss, and collision risk. Bird populations were surveyed between September 2009 and November 2010 within an area of up to 2km from the Development Area boundary. Sites designated for ornithological importance were considered within 20km.
57. The only designated site citing ornithological interests within 20km of the Development is the Shiel Dod Site of Special Scientific Interest (SSSI), which is designated in part for its upland breeding wader assemblage, including golden plover, curlew and dunlin. However, the nearest turbine is approximately 1.5km from the SSSI and therefore will not have any material effect on upland breeding waders on this site.
58. Merlin bred successfully at one site just outside the 2km search area for this species but activity was generally low during baseline surveys. Records show that peregrine also bred successfully in all years between 2011 and 2013 at a site over 750m from a proposed turbine; however, flight activity was recorded as low, with only three flights recorded during the breeding season. Three active barn owl roosts were recorded greater than 1km from the development; however, very low activity was recorded. Very low levels of other species including osprey, red kite and goshawk were recorded.
59. Wildfowl records during baseline surveys were limited to records of three goose species, barnacle geese, pink-footed geese and greylag goose and were mainly migratory movements.
60. Five golden plover breeding territories, three curlew territories, one lapwing and six snipe territories were recorded during the surveys. A male black grouse was recorded displaying ('lekking') to the north of the study area on four occasions and a female black grouse was recorded feeding within the study area.
61. One of the initial objectives of the design strategy was to develop a layout which minimised effects on the locations of peregrine and barn owl nesting and roosting sites. During the early design process, a precautionary 750m buffer was applied around the peregrine nest sites, and a 500m buffer around the barn owl site for locating turbines, as recommended by SNH.
62. The assessment was undertaken under the assumption that a Bird Protection Plan (BPP), approved by SNH, will be in place prior to the start of construction activities. The BPP will describe survey methods for the identification of sites used by protected birds and will detail operational protocols for the prevention, or minimisation, of disturbance to birds as a result of activities associated with the Development.
63. Given the design modifications introduced and the implementation of the BPP, no significant effects on ornithology are predicted.

1.11. Noise

64. The noise assessment has considered the potential noise effects during construction of the Development and the effects of aerodynamic and mechanical noise from operational turbines, including cumulative effects. The analysis of construction noise effects was undertaken in accordance with accepted guidance that provides methods for predicting construction noise levels on the basis of reference data for the emissions of typical construction plant and activities. Operational noise levels were assessed in line with government guidance on assessing noise from wind turbines, which compares predicted operational noise levels with the existing background noise levels.
65. The study area for the assessment included residential dwellings located in the vicinity of both the Development and the proposed construction traffic routes.
66. The Development is located in an area of relatively low population density. The noise environment in the surrounding area is generally characterised by 'natural' sources, such as wind disturbed vegetation, flowing water, birds and farm animals. Background noise monitoring was conducted between July and September 2010 at four noise monitoring locations. These locations were considered to be representative of the background noise environment around the Development Area and were agreed in consultation with the Environmental Health Department of Dumfries and Galloway Council.
67. During the early stages of the design process, an approximate 1km buffer distance was applied between turbines and residential properties and this has been maintained throughout the design process. Noise levels were calculated for progressive turbine layouts and the final application layout reviewed to confirm compliance with the limits set out in government guidance.
68. It is not considered likely that noise levels during construction will exceed acceptable limits at residential properties. Notwithstanding this, SPR is committed to following accepted guidance and to using methods for minimising noise from construction activities.
69. The assessment determined that cumulative noise levels meet the day time and night time noise limits under all wind speeds and at all locations except at one property. However, by constraining four nearby Harestanes Windfarm turbines under certain conditions, cumulative operational noise levels at this property will meet the relevant noise limits and no significant effects are predicted.

1.12. Cultural Heritage

70. Cultural heritage assets include sites, features and areas with statutory and non-statutory designations, including Scheduled Monuments; Listed Buildings; Conservation Areas; Archaeologically Sensitive Areas (ASAs); Gardens and Designed Landscapes (Inventory and Non Inventory status); Non Statutory Register (NSR) sites and other historic environment interests.
71. The assessment considered direct effects, such as the removal or damage of features within the Development Area, and indirect effects on the setting of designated sites within the surrounding area.
72. The study area for assessing direct effects was defined as the Development Area. A wider study area, extending to 10km from the outermost turbines was defined as the study area for the identification of cultural heritages assets whose settings may be affected by the Development. A desk based assessment of cultural heritage records was followed by a walkover survey of the Development Area and site visits to the wider area.

73. Three Scheduled Monuments ranging in date from the early Bronze Age to the 18th century as well as a number of undesignated features are located within the Development Area. Within the 10km study area there are several statutory and non-statutory designated assets including the village of Moffat which is designated as a Conservation Area, one Category A Listed Building, 12 Category B Listed Buildings, 32 Scheduled Monuments, seven NSR sites, Raehills Inventory status Garden and Designed Landscape, two non-Inventory Designed Landscapes and Beattock Hill ASA.
74. The layout of the Development, including the positioning of the turbines, access tracks and other infrastructure was designed to avoid direct effects on all cultural heritage features. Appropriate buffers, dependent on the type of feature, the relative importance of the site, and the potential for buried remains to survive close by were applied.
75. It is predicted that there will be no direct effects on cultural heritage sites within the Development Area during construction, and there will be no significant adverse indirect effects on the settings of cultural heritage assets within 10km of the Development. No significant indirect cumulative effects are predicted on cultural heritage assets within 10km.
76. Archaeological features that lie in proximity to proposed Development features will be visibly marked off during construction works to avoid any accidental damage. An archaeologist will be appointed to monitor construction activities likely to expose buried remains.

1.13. Access, Traffic and Transport

77. The assessment of access, traffic and transport considers the potential effects of construction traffic associated with the Development on the road network and other road users, on road infrastructure condition and on local communities.
78. The study area for access, traffic, and transport has been defined as the public road network in the vicinity of the Development which will be used by traffic accessing the Development Area; this includes the A701 and A75 trunk roads. It is not anticipated that any vehicles will need to use any minor local roads near the Development Area. The assessment has been informed by a combination of desk-top study, field survey and in consultation with statutory agencies in line with current good practice and policy advice.
79. Effects associated with traffic generated by the Development will be most pronounced near the access to the Development Area. As vehicles travel away from the Development, they shall split across the wider road network. The A701 is a trunk road that runs broadly north-east to south-west linking with the A74(M) and A75. The A701 passes through the communities of Locharbriggs and Heathhall. In addition, the A75 runs approximately east to west linking the A77 and A74(M) skirting the northern edge of Dumfries. Both routes operate below their design capacity.
80. During construction, turbine components and construction materials will be delivered to the Development Area. Some materials will be transported by Heavy Goods Vehicles (HGVs) and turbine components need to be transported on vehicles capable of carrying 'abnormal loads'. All abnormal load and escort traffic will approach from the north from the A74(M) utilising the A701 southbound to the existing Harestanes Windfarm site access by Burrance bridge. For the purpose of the assessment it is assumed that 50% of HGV traffic (excluding abnormal loads and escort vehicles) will approach from the north, potentially having originated in the Glasgow area and thus travelled southbound along the A701. It is assumed that the remainder of HGV traffic will approach from the south,

potentially having originated in the Dumfries area and thus travelled northbound along the A75 and A701. A scenario whereby 100% of the traffic approaches from a single route is also modelled.

- 81. No significant effects on traffic flow, road infrastructure condition or communities during construction are predicted. However, a Traffic Management Plan and monitoring and repair of any damage attributable to the Development will be implemented to promote the safe and efficient transportation of components and materials to the Development.
- 82. Once operational, windfarms typically generate very low levels of traffic. It is estimated that the Development will generate fewer than ten vehicle movements per day for the purposes of maintenance, repairs, and servicing, therefore there will be no significant effect.

1.14. Socio-Economics, Tourism, Recreation and Land Use

- 83. The assessment considers the potential effects of the Development on socio-economics, tourism, recreation and land use, including potential effects on the local economy of Dumfries and Galloway and on public access and recreation within, and around, the Development Area.
- 84. With respect to direct employment and the wider economic effects of the Development, the assessment considered effects within the Dumfries and Galloway administrative area and the neighbouring authority of South Lanarkshire. Direct effects on public access and land use were considered for the Development Area and effects on recreation included the adjacent Forest of Ae within which Harestanes Windfarm is located. The cumulative assessment considers the effect of the construction and operation of windfarms within 35km of the Development given the potential link between recreation and tourism effects and visual effects. Desk based information sources were used to assess the likely scale of effects, supplemented by consultation with local stakeholders.
- 85. Within Dumfries and Galloway there is a high concentration of jobs within the services sector as well as 'other services', including public administration, education and health. Levels of employment in the construction sector in Dumfries and Galloway are close to national levels at 5.6%. The unemployment rate was 8.0% between June 2012 and July 2013, which is marginally higher than the Scottish rate of 7.9%.
- 86. Whilst the Development Area is not used extensively for recreational purposes, there are a number of Rights of Ways (RoW) and Core Paths partly within the Development Area. The Forest of Ae, one of the largest forests in Great Britain, also lies directly south of the Development Area and is openly accessible to the public for a range of recreational activities. The Southern Upland Way long distance walking route passes within 1.5km north-east of the Development Area at its closest point.
- 87. Research commissioned by SPR found that employment opportunities for local people are currently greatest during the construction and installation of windfarm infrastructure. As a result of this research, SPR and Skills Development Scotland has worked with Dumfries and Galloway College and Ayr College to develop a nationally accredited Turbine Technician's Professional Development Award. This is designed to equip participants with the skills and knowledge required to work in the industry. The Turbine Technician course commenced in Dumfries and Galloway College in September 2013.

88. During construction, it is predicted that there will be a minor (temporary, positive) effect on direct employment opportunities and indirect economic benefits as SPR will seek to secure positive benefits for the local economy by encouraging the use of local labour, manufacturers and suppliers where possible. It is also predicted that there will be a minor effect on public access and recreation (a RoW) and the access routes throughout Harestanes Windfarm). However, should a temporary closure of the RoWs be required, in accordance with the Scottish Outdoor Access Code, mitigation such as signage and temporary footpath diversion will be put in place. During the operational phase of the Development, public access to the Development Area will be reinstated.
89. Once operational, it is predicted that there will be minor (positive) effect on public access and recreation and effects on land use, as tracks within the Development Area will be maintained to enhance access opportunities.
90. Minor (positive) cumulative effects are predicted for direct employment opportunities and indirect economic benefits as SPR continues to seek to secure positive benefits for the local economy by working with others to identify training opportunities for local people in the skills required for windfarm operational and maintenance roles.

1.15. Other Issues

91. This assessment considers the potential effects of the Development on aviation and defence and television. The findings of the carbon balance assessment for the Development are also discussed.

1.15.1 Aviation and Defence

92. Once operational, windfarms can potentially affect navigation and surveillance systems (including radar).
93. The Development Area is located within the Ministry of Defence (MoD) Tactical Low Flying Training Area 20T, however, no effects are considered likely and SPR will install infra-red aviation lights on the turbines if requested by the MoD.
94. The Development Area lies approximately 25km from the Eskdalemuir Seismological Recording Station which is within the 50km statutory safeguarded area for this station. Whilst the seismological noise budget for the 50km area around the station has been reached, SPR understands that the budget will be increased and therefore no significant effects on Eskdalemuir Seismological Recording Station are predicted.
95. NATS En Route plc (NERL) Lowther Hill Primary Surveillance Radar (PSR) is located approximately 14km from the Development Area and SPR will work with NERL to identify a mitigation solution, should this be necessary.

1.15.2 Television (TV) Reception

96. Wind turbines have the potential to interfere with television broadcasting systems causing viewers to experience a degraded picture quality or loss of reception.
97. Whilst the BBC online tool reported no properties are likely to be affected by the Development, detailed computer modelling has identified that there are three properties where there may be interference. Assuming a precautionary approach, it is considered that this comprises a significant effect on the identified properties. The actual effects on television reception will be confirmed following an onsite survey should issues arise. Installation of satellite television or upgrades of the current antennae systems will be the most appropriate and effective form of mitigation, if required.

1.15.3 Carbon Balance

98. A carbon balance assessment has been undertaken demonstrating that the Development will payback any carbon dioxide (CO₂) emitted during construction within 18.7 months of operation. Beyond this period, the Development will make a positive net contribution to CO₂ emissions savings. Therefore, the carbon offset by the Development will contribute positively to meeting Scotland's targets for reducing greenhouse gas emissions.

1.15.4 Summary

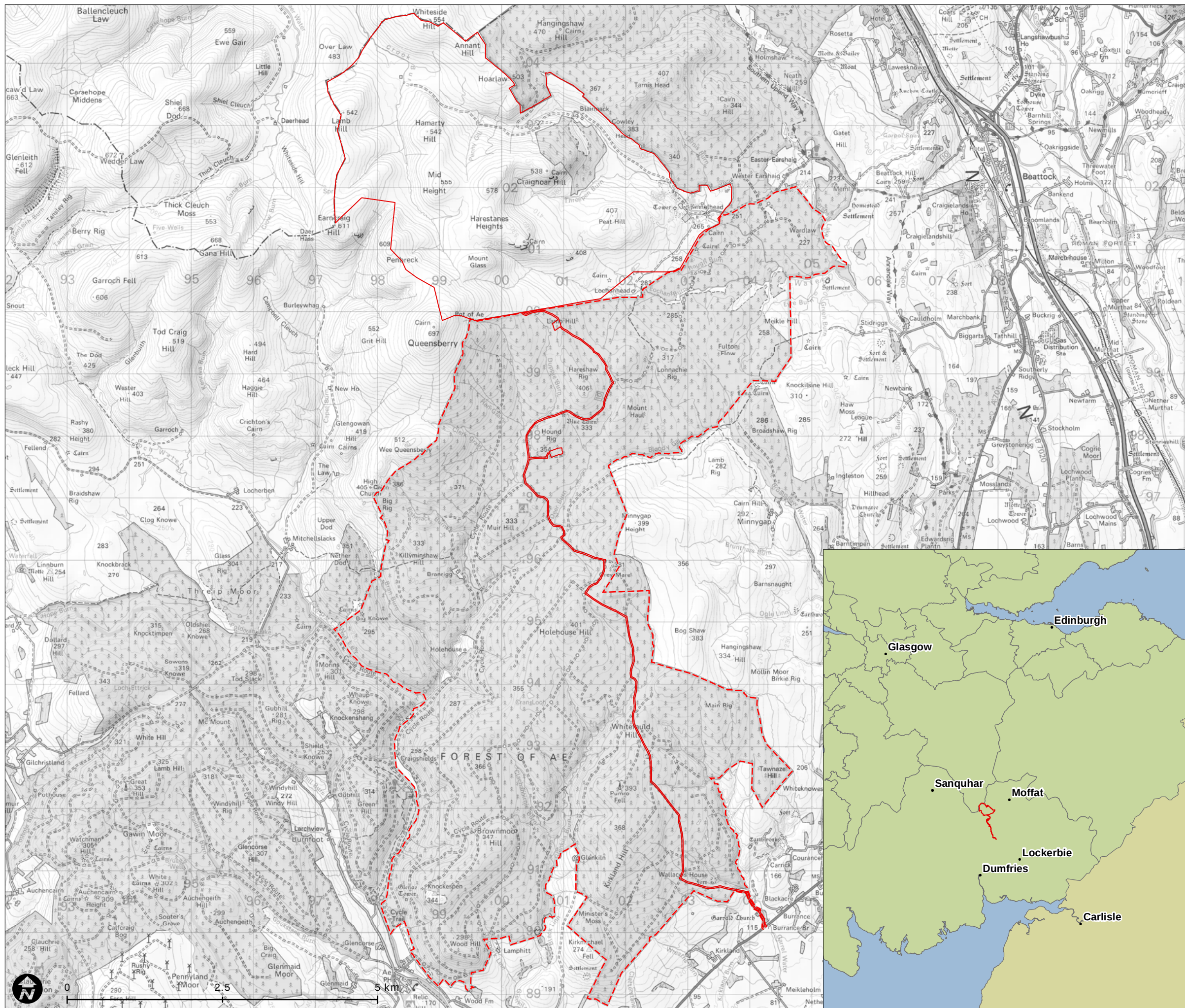
99. The EIA of the proposed Development was carried out in accordance with regulatory requirements and guidance on good practice.
100. The findings of the surveys undertaken as part of the EIA, in addition to extensive consultation, have informed the design process and, as a result, a number of significant design changes have been introduced to reduce effects on surrounding receptors including local residences and natural heritage resources.
101. Overall, the ES shows that, given the iterative design process, and with the committed good practice measures and proposed mitigation in place, most potential environmental effects associated with the construction and operation of the Development can be avoided or minimised. Therefore, it is considered that the Development will not have significant adverse effects on the environment with the exception of landscape and visual effects. In all cases, the predicted operational effects of the Development are considered to be long-term (persisting for the life of the Development) but reversible, such that following decommissioning these effects will no longer be present.
102. In addition to using the existing Harestanes Windfarm infrastructure, the Development will represent an important environmental benefit in that it involves the generation of electricity from a renewable energy source that will reduce or avoid the use of fossil fuels. The Development has a payback time of 18.7 months. Beyond this period, it will make a positive net contribution to CO₂ emissions savings for the remainder of its 25 year operational period. Therefore, the carbon offset by the Development will contribute positively to meeting Scotland's targets for reducing greenhouse gas emissions. The proposed Development will also lead to beneficial effects in relation to employment creation during both construction and operation.

1.16. References

ⁱ HMSO (1989) *Electricity Act 1989*

ⁱⁱ HMSO (1997) *The Town and Country Planning (Scotland) Act 1997*, as amended by: HMSO (2006). *The Planning Act (Scotland) 2006*

ⁱⁱⁱ Scottish Executive, (2000). *Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2000* as amended.



**SCOTTISHPOWER
RENEWABLES**

Harestanes Windfarm Extension

Development Location

- Harestanes Windfarm Extension
Section 36 Application Boundary
- Harestanes Windfarm
(Consented Site Boundary)

Figure 1

Map Scale @ A3:1:60,000





 Harestanes Windfarm Extension
Section 36 Application Boundary

 Development Area Boundary

Map Scale @ A3:1:60,000



